

REMARKS

Claims 1-19 are pending in the application. The Examiner has rejected Claims 1-19 under 35 U.S.C. §103(a) as being unpatentable over Banister (U.S. Patent 6,876,641) in view of Berger et al. (U.S. Publication 2003/0221156) and further in view of Javerbring et al. (U.S. Patent 6,604,216).

As an initial matter, please note that the Examiner stated that the priority document, KPA 2000-62153, has not been received. It is respectfully submitted that the priority document was in fact filed with the U.S. Patent and Trademark Office on November 30, 2001 as evidenced by the return postcard, bearing the U.S. Patent and Trademark Office Stamp, a copy of which is attached hereto. Proper acknowledgement of receipt of the priority documents is respectfully requested.

Regarding the rejections of independent Claims 1, 5, 8, 11, 14 and 17, the Examiner states that the combination of Banister, Berger et al. and Javerbring et al. discloses all of the elements of the claims. Banister discloses a fast feedback channel with flexible bit reliability for wireless communications; Berger et al. discloses a method and apparatus for concatenating punctured encoding and decoding of a communications signal; and Javerbring et al. discloses a telecommunications system and method for supporting an incremental redundancy error handling scheme using available gross rate channels. Each of Banister, Berger et al. and Javerbring et al. relate to puncturing via a preset puncturing pattern.

Each of independent Claims 1, 5, 8, 11, 14 and 17 are directed in part to either an apparatus or method for pruning part of the channel-interleaved symbols so that the number of channel-interleaved symbols is equal to the number of transmittable modulation symbols. Pruning is clearly defined throughout the specification as a discontinuation of symbols at a predetermined time point, for example at page 6, page 45, FIGs. 6 through 23 and their associated text. Since puncturing is not pruning, and none of the references disclose pruning, the rejections must fail.

Moreover, paragraphs [0154]-[0160] of the specification of the present application disclose three conditions for efficiently transmitting packets at the time of retransmission in a mobile communication system supporting HARQ. The optimal method for satisfying the three conditions is to make the length of sub-codes according to each code rate equal to that of transmission frames. However, the frame length is a parameter determined by the specification of a physical channel. To make the length of sub-codes equal to that of the transmission frames is not that simple or easy, as described in the paragraphs [161]-[165] of the present application. For example, a conventional method of adding padding bits causes the reduction of system throughput, and another method of successively transmitting codewords having different code rates from each other and identifying each codeword on a codeword basis in a receiver causes great difficulty in realizing the receiver. In order to solve these problems, the present invention suggests a method of pruning symbols, which are not assigned to a transmission frame, from among the modulation symbols of sub-codes, and has the technical feature of using a minimum code rate as a code rate of each sub-code for minimizing the number of symbols to be pruned.

In this regard, the Examiner acknowledges that Banister fails to teach that the modulation symbols generated by a predetermined modulation method are equal to or greater than the number of transmittable modulation symbols for each time period, and a symbol pruner for pruning part of the modulation symbols of the sub-code, which are two technical features of the present invention.

Also, referring to the modulating circuit (reference numeral 128 of FIG. 1) and col. 1 lines 64-66 of Javerbring cited by the Examiner, the modulating circuit 128 merely performs a general operation of producing a modulated signal to be transmitted over a fixed rate channel by using a punctured data block. Accordingly, Javerbring fails to teach or suggest the feature of modulating sub-codes at a minimum code rate in order to make the number of the sub-codes equal to or greater than the number of transmittable modulation symbols for each time period, which is taught by the present invention.

Also, referring to FIG. 1 (reference numerals 28 and 32) and paragraph [0030] of Berger, a puncturing module only performs the operation of a general puncturer of puncturing at least one bit of a codeword according to a predetermined puncture bits pattern as shown in Table 1 of paragraph [0034] of Berger. Therefore, Berger fails to teach or suggest the feature of pruning a part of sub-codes to make the length of sub-codes equal to the length of transmission frames, which is taught by the present invention. In other words, the pruning feature of the claims of the present application is to prune the second part of channel interleaved symbols of sub-codes which are not assigned to transmission frames. Pruning is clearly different from the puncturing feature of deleting at least one bit from each codeword with a predetermined puncturing pattern so as to match the codeword to a code rate of Berger.

Finally, the claims of the present application disclose generating sub-codes with a minimum code rate and pruning and transmitting modulation symbols of the sub-codes in order to transmit one sub-code by matching its length to one transmission frame length, and thereby minimizing the complexity of a receiver and simplifying a transmission protocol for a transmitter. These effects of the present invention are neither taught nor suggested by any of the references, alone or in combination.

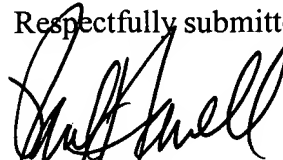
Based on at least the foregoing, withdrawal of the rejections of independent Claims 1, 5, 8, 11, 14 and 17 is respectfully requested.

Independent Claims 1, 5, 8, 11, 14 and 17 are believed to be in condition for allowance. Without conceding the patentability per se of dependent Claims 2-4, 6, 7, 9, 10, 12, 13, 15, 16, 18 and 19, these are likewise believed to be allowable by virtue of their dependence on their respective amended independent claims. Accordingly, reconsideration and withdrawal of the rejections of dependent Claims 2-4, 6, 7, 9, 10, 12, 13, 15, 16, 18 and 19 is respectfully requested.

Accordingly, all of the claims pending in the Application, namely, Claims 1-19, are believed to be in condition for allowance. Should the Examiner believe that a telephone

conference or personal interview would facilitate resolution of any remaining matters, the Examiner may contact Applicants' attorney at the number given below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Paul J. Farrell", written over the typed name.

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